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EXAMINER

KADING, JOSHUA A

ART UNIT	PAPER NUMBER
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2661

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7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/627,179

Applicant(s)

HELLWIG ET AL.

Examiner

Joshua Kading

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 14-31 is/are rejected.
- 7) ☒ Claim(s) 14, 17, 19 and 21-24 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on 07/27/1999. It is noted, however, that applicant has not filed a certified copy of the 199 35 126.0 application as required by 35 U.S.C. 119(b).

Specification

2. The disclosure is objected to because of the following informalities:
3. Page 11, line 6 is an example of the following, "port units 3 in Figure 1". This particular phrase appears several times throughout the specification. It is unclear which port unit 3 you are referring to because there are only port units 3₁ and 3_N.
4. Page 18, line 12 states, "denoted by "destination" in Figure 3". There is no figure 3, only figures 3A and 3B.
5. Appropriate correction is required.

Claim Objections

6. Claims 14, 17, 19, 21, 22, 23, and 24 are objected to because of the following informalities:
7. Claims 14 and 21, line 1 of section B states, "a port unit". It should read, "one of said port units". Also line 2 of section B states, "another port unit". It should read, "another one of said port units".

Art Unit: 2661

8. Claims 14 and 21, line 2 of section C states, "supplied to one of the at least". It should read, "supplied to at least". Also, line 4 of section C states, "that port unit". It should read, "a receiving port unit". Also, line 6 of section C states, "respective port unit". It should read, "receiving port unit".
9. Claims 14 and 21, line 3 of section D states, "at least one of cell". It should read, "at least one cell".
10. Claims 14 and 21, line 1 of section E states, "transmitting with". It should read, "transmitting using".
11. Claims 14 and 21, line 4 of section F states, "transmitted to which". It should read, "transmitted to a second" or "transmitted to a different". Also, line 5 of section F states, "other port unit". It should read, "port unit". Also, line 6 of section F states, "the occurrence". It should read, "an occurrence".
12. Claims 14 and 21, line 3 of section H states, "connecting the necessary". It should read, "connecting necessary".
13. Claims 14 and 21, line 3 of section I states, "the relevant ports". It should read, "their respective ports" or "their assigned ports" or "their addressed ports".
14. Claim 17, line 5 states, "the position" and "indicating the". These should read, "a position" and "indicating a" respectively. Also, line 6 states, "port unit to which". It should read, "--port unit of said number of port units to which--". Also, line 7 states, "of the bits". It should read, "of the bit". Also, line 9 states, "absence". It should read, "--absence of a data packet or cell--".

Art Unit: 2661

15. Claim 19, line 3 states, "that port unit". It should read, "a port unit". Also, line 4 states, "that port unit". It should read, "another port unit".
16. Claim 21, line 2 states, "on the Ethernet". It should read, "on Ethernet". Also, line 3 states, "standard". It should read, "standards".
17. Claims 22 and 23, line 4 states, "port units connected". It should read, --a plurality of port units connected--.
18. Claim 22, lines 17-18 states, "supplied to one of said at least". It should read, "supplied to at least". Also, line 21, "that port unit". It should read, "a receiving port unit".
19. Claim 22, line 27 states, "cell and at". It should read, "cell or at".
20. Claim 22, line 30 states, "with the port units". It should read, "using the port units".
21. Claim 22, line 35 states, "transmitted to which other of". It should read, "transmitted to a second port of" or "transmitted to a different port of". Also, line 37 states, "the occurrence". It should read, "an occurrence".
22. Claim 22, line 8 states, "control unit, with:". It should read, "control unit, the control unit comprising:".
23. Claim 24, line 4 states, "information during". It should read, --information item during-- or --information signal during--.
24. Appropriate correction is required for the above objections and for those relating to the objections above that may have been missed.

Art Unit: 2661

25. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

26. Claims 14-16, 18, 21, 22, 23, 24, 25, and 26-31 are rejected under 35

U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

27. In regard to claims 14, 21, 22, 24, 26, 27, 28, and 29, applicant mentions "the port units" or "port units" or "each port unit" or "the other port units" or "the relevant ports" or "said port units" throughout the claim language. It is unclear from this phrasing which port units applicant is referring to. For example, claim 14, section A refers to a plurality of port units, then claim 14, section B refers to a connection between two port units, it is unclear from the claim language, "the port units" or "port units", which set of port units (section A or B) applicant is referring to.

28. Claims 14, 16, 18, 21, 22, 24, 26, 27, 28, and 29 also mention, "the relevant port" or "the relevant transmitting port units" or "the transmitting port units" or "the receiving port units" or "the respective receiving port units" throughout the claim language. It is unclear, for similar reasons as in paragraph 27, which port units applicant is referring to with this claim language.

29. Claims 14, 21, and 22 also mention, "recombining the cells received in a plurality of steps". It is unclear what steps applicant is referring to. Is applicant referring to the steps of receiving the cells or of recombining the cells? If the applicant is referring to recombining the cells what are the steps for recombining?

30. Claim 22 also states, "said port units and said central switching unit each having a control unit, the control unit comprising:" followed by several means plus function limitations for the control unit. It is unclear which limitations are carried out by the control unit and which are carried out by another apparatus. For example, "means for evaluating the availability information with the central switching unit and for using a prescribed specification...", is carried out by the central switching unit and not the control unit yet it is claimed as being carried out by the control unit.

31. Claim 23 states, "each having a control unit to carry out the method according to claim 14." It is unclear which limitations are carried out by the control unit and which are carried out by another apparatus. For example, "the central switching unit evaluating the availability information and using a prescribed specification...", is carried out by the central switching unit and not the control unit yet it is claimed as being carried out by the control unit.

32. In regard to claims 28 and 29, applicant states on line 9 of claims 28 and 29, "the information". It is unclear what information applicant is referring to because applicant makes reference to several different information items in this claim and its parent claims.

Art Unit: 2661

33. Claims 14, 21, and 22 recite the limitation "each data packet" in claims 14 and 21 line 2 of section C; in claim 22 line 18. There is insufficient antecedent basis for this limitation in the claim.

34. Claims 14, 15, 21, and 22 recite the limitation "the data packet" or "the data packet or cells" or "the received data packets or cells" in claims 14 and 21 lines 4, 5 of section C; in claims 14 and 21 lines 5 of section H; in claims 14 and 21 lines 2, 3 of section I; in claim 15 line 3; in claim 22 lines 21, 23, 50-52, and 55. There is insufficient antecedent basis for this limitation in the claim.

35. Claims 14, 21, and 22 recite the limitation "the...one data packet" in claims 14 and 22 line 4 section D; in claim 22 line 28. There is insufficient antecedent basis for this limitation in the claim.

36. Claims 28 and 29 recite the limitation "the next steps" in claims 28 and 29 line 10. There is insufficient antecedent basis for this limitation in the claim.

37. Claims 29 and 31 recite the limitation "the availability information" in claim 28 line 9; in claim 29 lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Art Unit: 2661

38. Appropriate correction is required for the above rejections and for those similar to the rejections above that may have been missed.

39. Claim 25 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 25 states, "an apparatus according to claim 24, wherein said collision resolution unit is integrated in said central switching unit." However, claim 24 states, "...said central switching unit has a collision resolution unit..." This says the same thing as claim 25, therefore claim 25 fails to further limit claim 24.

Claim Rejections - 35 USC § 102

40. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

41. Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by Cordell (U.S. Patent 5,367,520).

42. In regard to claim 23, Cordell discloses an apparatus for switching a plurality of packet-oriented signals, comprising:

43. a central switching unit (figure 9, element 93); and

Art Unit: 2661

44. a plurality of port units connected to said central switching unit, said port units and said central switching unit each having a control unit to carry out the method according to claim 14 (figure 9, elements 91, 93, 94, 95 where 91 and 94 are the port units, 93 is the central switching unit, and 95 is the control unit).

Claim Rejections - 35 USC § 103

45. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

46. As understood at this time, claims 14, 16, 20, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell in view of Cai et al. (U.S. Patent 6,134,246).

47. In regard to claim 14, Cordell discloses a method for switching a plurality of packet-oriented signals, which comprises:

48. a) supplying a respective signal to at least one port of a plurality of port units, each of the port units having a predetermined number of ports (figure 9, elements 91, 94 where there are clearly a plurality of port units (elements similar to 91 and 94) and a predetermined number of ports to which signals must be applied as is indicated by the inputs and outputs on the port units);

Art Unit: 2661

49. b) connecting the signal from a port on a port unit to another port on another port unit through a central switching unit coupled to the port units, and carrying out signal transmission between the port units and the central switching unit in steps by transmitting data blocks (figure 9, elements 91, 93, 94 where the datapaths between these elements signify the coupling and element 93 is the central switching unit (col. 22, lines 12-13));

50. c) ascertaining with each port unit an address information item for each data packet supplied to one of the at least one port of each port unit and using the address information item to determine that port unit to which the data packet will be transmitted, each port unit storing, in a buffer memory associated with the respective port unit, the data packet as a whole or segmented into a plurality of cells (col. 3, lines 42-43 shows a buffer associated with an address of a port unit; col. 7, lines 50-52 shows the cell being directed to a final output port);

51. d) compiling with each port unit, at predetermined intervals of time, availability information indicating to which of the other port units the at least one of cell and at least one data packet will be transmitted (col. 7, lines 9-11 where the routing tag is the availability information as defined in claim 14, section D (i.e. an address); col. 13, lines 39-44 where the phrase "address comparisons made earlier in a round of contention" teaches address comparisons that are done in a predetermined order, or at predetermined intervals of time);

52. e) transmitting with the port units the availability information to the central switching unit (col. 7, lines 9-23 where by having the cells being self routing and having

Art Unit: 2661

parts of the routing tag specifying output ports, the availability or routing tag must be transmitted with the cell to the central switching unit (93) in order to get to the output ports and be further directed to its destination);

53. f) the central switching unit evaluating the availability information and using a prescribed specification to ascertain authorization information indicating from which port units a respective data packet or cell can be transmitted to which other port unit in a next step or in a particular one of next steps without the occurrence of blocking (col. 22, lines 12-15 and col. 12, lines 34-36 where the CRD evaluates the availability information (the address information) and ascertains authorization information (the result of the address comparison by the CRD); col. 24, lines 64-67 shows the avoidance of blocking);

54. g) transmitting the authorization information at least to the relevant transmitting port units with the central switching unit (col. 8, lines 42-45);

55. h) transmitting particular released data packets or cells with the transmitting port units to the central switching unit, and the central switching unit connecting the necessary paths between the transmitting port units and the receiving port units and transmitting the data packets or cells to the respective receiving port units through the connected paths (figure 9, elements 91, 93, and 94 and the data paths between them indicate the input of a data packet (91), en route to its destination (93), arriving at the destination or output (94)); and

56. i) the receiving port units evaluating the address information in the received data packets or cells and assigning the data packets or cells to the relevant ports (col. 7,

Art Unit: 2661

lines 46-52 shows the incoming data being routed to the appropriate output port address, thus the address information must have been evaluated at the receiving ports)...

57. Cordell lacks ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports.

58. However, Cai et al. disclose ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports (figure 3 where elements 130, 140, and 150 are incoming data packets that are desegmented into cells by element 20 then recombined at element 50 to form the output packet 160, although 20 and 50 are separate switches it is a matter of design choice to make them separate switches or combine them into one switch). It would have been obvious to one with ordinary skill in the art at the time of invention to include the switch with the deassembler and assembler. The motivation being to increase apparent bandwidth of the system by splitting up the packet, processing it, then reassembling them into the packet.

59. Claim 16 is rejected for the same reasons as claim 14 even though claim 14 lacks providing the availability information in a header of a packet or cell being transmitted by the relevant port unit to the central switching unit. However, Cordell further discloses providing the availability information in a header of a packet or cell being transmitted by the relevant port unit to the central switching unit (col. 7, lines 9-23 where by having the cells being self routing and having parts of the routing tag

Art Unit: 2661

specifying output ports, the availability or routing tag must be transmitted with the cell to the central switching unit (93) in order to get to the output ports and be further directed to its destination, and the routing tag being prepended to the cell acts as a header).

60. Claim 20 is rejected for the same reason as claim 14 even though claim 14 lacks the step of indicating with a header of a packet or cell a port unit and a port on a the port unit to which the packet or cell will be transmitted. However, Cordell further discloses the step of indicating with a header of a packet or cell a port unit and a port on a the port unit to which the packet or cell will be transmitted (col. 7, lines 9-23 where the routing tag is broken down into bits some of which identify an output port of the crosspoint plane (port unit) and finally an output port).

61. In regard to claim 22, Cordell discloses an apparatus for carrying out the method according to claim 14, comprising:

62. a central switching unit (figure 9, element 93); and

63. a plurality of port units connected to said central switching unit, each of said port units having a predetermined number of ports and a buffer memory (figure 9, elements 91, 93, 94 where the port units (91, 94) are connected to the central switching unit (93) and the port units have buffer memories as can be seen in figure 9);

64. said port units and said central switching unit each having a control unit (figure 9, element 95), the control unit comprising:

Art Unit: 2661

65. means for supplying a respective signal to at least one port of said port units

(figure 9, elements 91, 94 where there are clearly a plurality of port units (elements similar to 91 and 94) and ports to which signals must be applied as is indicated by the inputs and outputs on the port units);

66. means for connecting the signal from a port on one of said port units to another

port on another of said port units through said central switching unit (figure 9, elements 91, 93, 94 where the datapaths between these elements signify the paths and element 93 is the central switching unit);

67. means for transmitting signals between said port units and said central switching

unit in steps by transmitting data blocks (figure 9, elements 91, 93, 94 where the datapaths signify transmitting signals between port units (91 and 94) element 93 is the central switching unit (col. 22, lines 12-13));

68. means for ascertaining with each port unit an address information item for each

data packet supplied to one of said at least one port of each of said port units (col. 3, lines 42-43 shows a buffer associated with a port unit which is obtained from an address information item);

69. means for using the address information item to determine that port unit to which

the data packet will be transmitted, each port unit storing, in said buffer memory, the data packet as a whole or segmented into a plurality of cells (col. 3, lines 42-43 shows a buffer associated with a port unit; col. 7, lines 50-52 shows the cell being directed to a final output port);

Art Unit: 2661

70. means for compiling with each port unit, at predetermined intervals of time, availability information indicating to which of the other port units the at least one of cell or at least one data packet will be transmitted (col. 7, lines 9-11 where the routing tag is the availability information as defined in claim 14, section D (i.e. an address); col. 13, lines 39-44 where the phrase "address comparisons made earlier in a round of contention" teaches address comparisons that are done in a predetermined order, or at predetermined intervals of time);

71. means for transmitting the availability information to the central switching unit using the port units (col. 22, lines 12-15 where the CRD gets the availability information from the port units);

72. means for evaluating the availability information using the central switching unit and for using a prescribed specification to ascertain authorization information indicating from which of said port units a respective data packet or cell can be transmitted to which other of said port units in a next step or in a particular one of next steps without the occurrence of blocking (col. 22, lines 12-15 and col. 12, lines 34-36 where the CRD evaluates the availability information (the address information) and ascertains authorization information (the result of the address comparison by the CRD); col. 24, lines 64-67 shows the avoidance of blocking);

73. means for transmitting using the central switching unit the authorization information at least to the relevant transmitting port units (col. 8, lines 42-45);

74. means for transmitting particular released data packets or cells to said central switching unit using the transmitting port units (figure 9, elements 91 and 93 and the

Art Unit: 2661

data paths between them indicate the input of a data packet (91) and being transmitted to the central switching unit (93));

75. means for connecting the necessary paths between said transmitting port units and said other receiving port units using said central switching unit (figure 9, elements 91, 93, and 94 and the data paths between them indicate the input of a data packet (91), en route through the central switching unit (93) to its destination, arriving at the destination or output (94));

76. means for transmitting the data packets or cells to respective other receiving port units through the connected paths (figure 9, elements 91, 93, and 94 and the data paths between them indicate the input of a data packet (91), en route through the central switching unit (93) to its destination, arriving at the destination or output (94));

77. means for evaluating address information in the received data packets or cells using said receiving port units (col. 7, lines 46-52 shows the incoming data being routed to the appropriate output port address and thus the address information being evaluated using said receiving port units); and

78. means for assigning the data packets or cells to the relevant ports (col. 7, lines 46-52 shows the incoming data being routed to the appropriate output port address, thus the address information must have been evaluated at the receiving ports)...

79. Cordell lacks ...if necessary, means for recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports.

Art Unit: 2661

80. However, Cai et al. disclose ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports (figure 3 where elements 130, 140, and 150 are incoming data packets that are desegmented into cells by element 20 then recombined at element 50 to form the output packet 160, although 20 and 50 are separate switches it is a matter of design choice to make them separate switches or combine them into one switch). It would have been obvious to one with ordinary skill in the art at the time of invention to include the switch with the deassembler and assembler. The motivation being to increase apparent bandwidth of the system by splitting up the packet, processing it, then reassembling them into the packet.

81. Claim 24 is rejected for the same reasons as claim 22 even though claim 22 lacks a central switching unit that has a collision resolution unit for using a prescribed specification to create a fairest possible authorization information item during a condition in which a plurality of said port units at the same time contain at least one data packet or cell available for transmission to the same other one of said port units. However, Cordell further discloses a central switching unit that has a collision resolution unit for using a prescribed specification to create a fairest possible authorization information item during a condition in which a plurality of said port units at the same time contain at least one data packet or cell available for transmission to the same other one of said port units (figure 9, element 93 where the CRD is the content or collision resolution unit; col. 12, lines 19-38 describes the CRD and a fairness scheme).

Art Unit: 2661

82. Claims 15, 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell and Cai et al. as applied to claim 14 above, and further in view of Diaz et al. (U.S. Patent 5,361,255).

83. In regard to claim 15, Cordell and Cai et al. disclose the method of claim 14 and transmitting availability information...and the data packets or cells synchronously at predetermined intervals of time (col. 7, lines 9-11 where the routing tag is the availability information as defined in claim 14, section D (i.e. an address); col. 13, lines 39-44 where the phrase "address comparisons made earlier in a round of contention" teaches address comparisons that are done in a predetermined order, or at predetermined intervals of time, and if the routing tag is prepended to the cell, then the routing tag must be sent at the same time (synchronously) as the data or cell). Cordell and Cai et al. lack transmitting...authorization information...synchronously at predetermined intervals of time. However, Diaz et al. disclose transmitting...authorization information... (figure 5a-5f, elements 50 and 56; col. 10, lines 9-36 where the V-bit (element 50) corresponds to part of the authorization information and the priority field (element 56) corresponds to the rest of the authorization information, the V-bit invalidates segments with the same address that have not won content resolution and the priority field allows the segments to be prioritized; the authorization information will be transmitted with the data because it is attached as the header as in figure 5a-5f). It would have been obvious to one with ordinary skill in the art at the time of invention to include the authorization information

Art Unit: 2661

with the availability information and the data packets or cells. The motivation being to eliminate blocking at each point in the switching process.

84. In regard to claim 18, Cordell and Cai et al. disclose a method according to claim 14. Cordell and Cai et al. lack providing the authorization information in a header of a packet or cell being transmitted from the central switching to the relevant port unit. However, Diaz et al. disclose providing the authorization information in a header of a packet or cell being transmitted from the central switching to the relevant port unit (figure 5a-5f, elements 50 and 56; col. 10, lines 9-36 where the V-bit (element 50) corresponds to part of the authorization information and the priority field (element 56) corresponds to the rest of the authorization information, the V-bit invalidates segments with the same address that have not won content resolution and the priority field allows the segments to be prioritized; the authorization information will be transmitted with the data because it is attached as the header as in figure 5a-5f). The motivation being to eliminate blocking at each point in the switching process.

85. Claim 19 is rejected for the same reasons as claim 19 even though claim 18 lacks the authorization information being a number of bits containing a coded designation for that port unit to which transmission of a data packet or cell is enabled from that port unit to which the authorization information is transmitted. However, Diaz et al. further disclose the authorization information being a number of bits containing a coded designation for that port unit to which transmission of a data packet or cell is

Art Unit: 2661

enabled from that port unit to which the authorization information is transmitted (figure 5a-5f, elements 50 and 56; col. 10, lines 9-36 where the V-bit (element 50) corresponds to part of the authorization information and the priority field (element 56) corresponds to the rest of the authorization information, the V-bit invalidates segments with the same address that have not won content resolution and the priority field allows the differently addressed segments to be prioritized; these priority fields are based on the destination address as is shown in col. 10, lines 17-21).

86. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell in view of Cai et al. as applied to claim 16 above, and further in view of Kozaki et al. (U.S. Patent 5,184,346).

87. In regard to claim 17, Cordell and Cai et al. disclose a method according to claim 16, wherein the availability information is a number of bits corresponding to at least one of an actual and maximum possible number of port units at least to be connected to the central switching unit, the position of a bit within the number of bits indicating the port unit to which a packet or cell is available for transmission (Cordell col. 7, lines 9-13 where the availability information is in the switch routing tag and the first 9 bits for instance, correspond to at least one of an actual and maximum possible number of port units)... Cordell and Cai et al. lack one binary state of the bit signifying the presence of a data packet or cell to be transmitted and the other binary state signifying the absence of a data packet or cell. However, Kozaki et al. disclose one binary state of the bit

Art Unit: 2661

signifying the presence of a data packet or cell to be transmitted and the other binary state signifying the absence of a data packet or cell (col. 6, lines 64-68). It would have been obvious to one with ordinary skill in the art at the time of invention to include the binary bit indicator with the availability information. The motivation being to recognize when data has been sent out of sequence or no data has been sent at all.

88. Claims 21, 26, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell in view of Cai et al. and further in view of Papierniak et al. (U.S. Patent 5,825,751).

89. In regard to claim 21, Cordell discloses a method for switching and routing a plurality of packet-oriented signals..., which comprises:

90. a) supplying a respective signal to at least one port of a plurality of port units, each of the port units having a predetermined number of ports (figure 9, elements 91, 94 where there are clearly a plurality of port units (elements similar to 91 and 94) and a predetermined number of ports to which signals must be applied as is indicated by the inputs and outputs on the port units);

91. b) connecting the signal from a port on a port unit to another port on another port unit through a central switching unit coupled to the port units, and carrying out signal transmission between the port units and the central switching unit in steps by transmitting data blocks (figure 9, elements 91, 93, 94 where the datapaths between

Art Unit: 2661

these elements signify the coupling and element 93 is the central switching unit (col. 22, lines 12-13));

92. c) ascertaining with each port unit an address information item for each data packet supplied to one of the at least one port of each port unit and using the address information item to determine that port unit to which the data packet will be transmitted, each port unit storing, in a buffer memory associated with the respective port unit, the data packet as a whole or segmented into a plurality of cells (col. 3, lines 42-43 shows a buffer associated with an address of a port unit; col. 7, lines 50-52 shows the cell being directed to a final output port);

93. d) compiling with each port unit, at predetermined intervals of time, availability information indicating to which of the other port units the at least one of cell and at least one data packet will be transmitted (col. 7, lines 9-11 where the routing tag is the availability information as defined in claim 14, section D (i.e. an address); col. 13, lines 39-44 where the phrase "address comparisons made earlier in a round of contention" teaches address comparisons that are done in a predetermined order, or at predetermined intervals of time);

94. e) transmitting with the port units the availability information to the central switching unit (col. 7, lines 9-23 where by having the cells being self routing and having parts of the routing tag specifying output ports, the availability or routing tag must be transmitted with the cell to the central switching unit (93) in order to get to the output ports and be further directed to its destination);

Art Unit: 2661

95. f) the central switching unit evaluating the availability information and using a prescribed specification to ascertain authorization information indicating from which port units a respective data packet or cell can be transmitted to which other port unit in a next step or in a particular one of next steps without the occurrence of blocking (col. 22, lines 12-15 and col. 12, lines 34-36 where the CRD evaluates the availability information (the address information) and ascertains authorization information (the result of the address comparison by the CRD); col. 24, lines 64-67 shows the avoidance of blocking);

96. g) transmitting the authorization information at least to the relevant transmitting port units with the central switching unit (col. 8, lines 42-45);

97. h) transmitting particular released data packets or cells with the transmitting port units to the central switching unit, and the central switching unit connecting the necessary paths between the transmitting port units and the receiving port units and transmitting the data packets or cells to the respective receiving port units through the connected paths (figure 9, elements 91, 93, and 94 and the data paths between them indicate the input of a data packet (91), en route to its destination (93), arriving at the destination or output (94)); and

98. i) the receiving port units evaluating the address information in the received data packets or cells and assigning the data packets or cells to the relevant ports (col. 7, lines 46-52 shows the incoming data being routed to the appropriate output port address, thus the address information must have been evaluated at the receiving ports)...

Art Unit: 2661

99. Cordell lacks ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports.

100. However, Cai et al. disclose ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports (figure 3 where elements 130, 140, and 150 are incoming data packets that are desegmented into cells by element 20 then recombined at element 50 to form the output packet 160, although 20 and 50 are separate switches it is a matter of design choice to make them separate switches or combine them into one switch). It would have been obvious to one with ordinary skill in the art at the time of invention to include the switch with the deassembler and assembler. The motivation being to increase apparent bandwidth of the system by splitting up the packet, processing it, then reassembling them into the packet.

101. Cordell and Cai et al. lack, ...packet-oriented signals in local area networks based on Ethernet standards... However, Papierniak et al. disclose packet-oriented signals in local area networks based on Ethernet standards (figure 2B where the ATM switch with LAN emulation (element 226) acts as the switch of Cordell and Cai et al. with the added capability of Ethernet LAN emulation). It would have been obvious to one with ordinary skill in the art at the time of invention to include the packet-oriented switch with the Ethernet LAN. The motivation being to allow transmission of ATM packets over an Ethernet based LAN.

Art Unit: 2661

102. In regard to claim 26, Cordell and Cai et al. disclose an apparatus according to claim 22, wherein each of said control units is said port units has an interface unit for coupling said port units to said central switching unit (Cordell figure 9, element 92)... Cordell and Cai et al. lack a protocol unit for carrying out control tasks internal to a respective one of said port units. However, Papierniak et al. disclose a protocol unit for carrying out control tasks internal to a respective one of said port units (figure 3 where the processor, and buffer are part of a port unit, col. 4, lines 20-29 where the processor carries out protocol control tasks internal to a respective one of said port units). It would have been obvious to one with ordinary skill in the art at the time of invention to include the apparatus of claim 22 with the protocol unit. The motivation being to allow for manipulation and control of the data packet.

103. Claim 30 is rejected for the same reasons as claim 26 even though claim 26 lacks said interface unit that is configured to transmit next availability information, ascertained after receipt of the authorization information, to said central switching unit immediately with a next data packet or a next cell. However, Cordell further discloses said interface unit that is configured to transmit next availability information, ascertained after receipt of the authorization information, to said central switching unit immediately with a next data packet or a next cell (the availability information is transmitted with the data packet as is read in col. 7, lines 9-23; the availability information is transmitted with the data packet after the authorization information (results of the CRD unit) is received).

Art Unit: 2661

104. Claims 27 and 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell in view of Papierniak et al.

105. In regard to claim 27, Cordell discloses an apparatus according to claim 23, wherein each of said control units is said port units has an interface unit for coupling said port units to said central switching unit (figure 9, element 92)... Cordell lacks a protocol unit for carrying out control tasks internal to a respective one of said port units. However, Papierniak et al. disclose a protocol unit for carrying out control tasks internal to a respective one of said port units (figure 3 where the processor, and buffer are part of a port unit, col. 4, lines 20-29 where the processor carries out protocol control tasks internal to a respective one of said port units). It would have been obvious to one with ordinary skill in the art at the time of invention to include the apparatus of claim 23 with the protocol unit. The motivation being to allow for manipulation and control of the data packet.

106. Claim 31 is rejected for the same reasons as claim 27 even though claim 27 lacks said interface unit that is configured to transmit next availability information, ascertained after receipt of the authorization information, to said central switching unit immediately with a next data packet or a next cell. However, Cordell further discloses said interface unit that is configured to transmit next availability information, ascertained after receipt of the authorization information, to said central switching unit immediately with a next data packet or a next cell (the availability information is transmitted with the

Art Unit: 2661

data packet as is read in col. 7, lines 9-23; the availability information is transmitted with the data packet after the authorization information (results of the CRD unit) is received).

107. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (703) 305-0342. The examiner can normally be reached on M-F: 8:30AM-5PM.

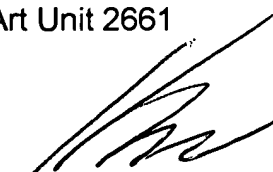
108. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

109. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



JK
October 17, 2003

Joshua Kading
Examiner
Art Unit 2661



KENNETH VANDERPUYE
PRIMARY EXAMINER